

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
24 July 2003 (24.07.2003)

PCT

(10) International Publication Number  
**WO 03/061032 A3**(51) International Patent Classification<sup>7</sup>: **H02J 7/04**(21) International Application Number: **PCT/US03/00565**(22) International Filing Date: **8 January 2003 (08.01.2003)**(25) Filing Language: **English**(26) Publication Language: **English**(30) Priority Data:  
10/042,898 9 January 2002 (09.01.2002) **US**(71) Applicant (for all designated States except US): **QUAL-  
LION LLC [US/US];** Legal Department, P.O. Box 923127,  
Sylmar, CA 91392-3127 (US).

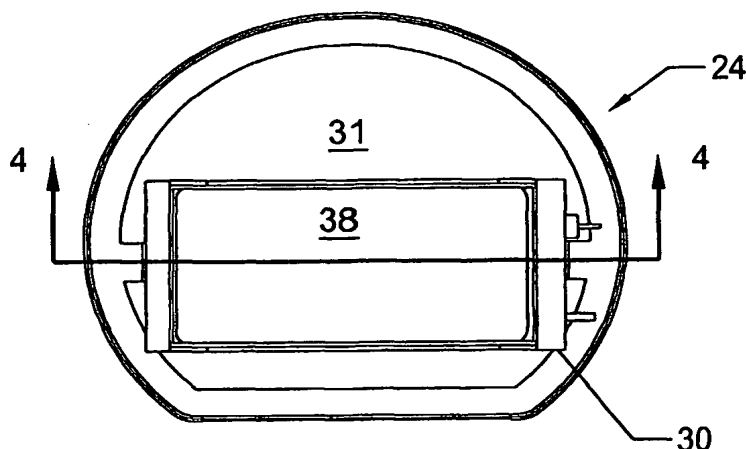
(72) Inventors; and

(75) Inventors/Applicants (for US only): **TSUKAMOTO,**  
**Hisashi [JP/US];** 28445 Via Joyce Drive, Saugus, CA  
91350 (US). **SKINLO, David [US/US];** 24703 Riverchase  
Dr., APT 8203, Valencia, CA 91355 (US). **KISHIYAMA,**  
**Clay [US/US];** 1735 Rudell Road, Burbank, CA 91501  
(US). **DODD, Joanna [US/US];** 1735 Rudell Road,  
Burbank, CA 91501 (US).(74) Agent: **BUSH, Mary, Elizabeth;** Quallion LLC, P.O. Box  
923127, Sylmar, CA 91392-3127 (US).(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,  
SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW.(84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,  
SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:  
25 September 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **METHOD AND APPARATUS FOR AMPLITUDE LIMITING BATTERY TEMPERATURE SPIKES**

(57) Abstract: A method and apparatus for containing heat generated by a battery to reduce the amplitude of a temperature excursion to enhance safety in temperature critical applications, such as in implantable medical devices. The apparatus employs a heat absorber (38) closely thermally coupled to the battery (30). The heat absorber includes heat-absorbing material preferably exhibiting an endothermic phase change at a temperature below that produced by the battery.

WO 03/061032 A3

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/00565

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H02J 7/04

US CL : 320/112, 150; 429/120

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 320/107, 110, 112, 150, 153; 429/8, 120

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

USPTO APS EAST

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,314,008 A (BLAKE) 02 February 1982 (02.02.1982), see entire document.	1-49

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

20 MARCH 2003

Date of mailing of the international search report

08 AUG 2003

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

EDWARD TSO

Telephone No. (703) 305-0956